

# Enterprise Option for SAP R/3 for Oracle

Arcserve® Backup for UNIX and LINUX

19.0

arcserve®

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- You can use our Live Chat link to instantly launch a real-time conversation between you and the Arcserve Support team. With Live Chat, you can get immediate answers to your concerns and questions, while still maintaining access to the product.
- You can participate in the Arcserve Global User Community to ask and answer questions, share tips and tricks, discuss the best practices and participate in conversations with your peers.
- You can open a support ticket. By opening a support ticket online, you can expect a callback from one of our experts in the product area you are inquiring about.
- You can access other helpful resources appropriate for your Arcserve product.

## Arcserve Product References

This document references the following Arcserve products:

- Arcserve® Backup
- Arcserve® Unified Data Protection
- Arcserve® Unified Data Protection Agent for Windows
- Arcserve® Unified Data Protection Agent for Linux
- Arcserve® Replication and High Availability

## Arcserve Backup Documentation

Arcserve Backup documentation contains specific guides and release notes for all major releases and service packs. Click links below to access documentation.

- [Arcserve Backup 19.0 Release Notes](#)
- [Arcserve Backup 19.0 Bookshelf](#)

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## Chapter 1: Introducing the Option

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## Introduction

Arcserve Backup is a comprehensive storage solution for applications, databases, distributed servers, and file systems. It provides backup and restore capabilities for databases, business-critical applications, and network clients. In addition, Arcserve Backup helps administrators simplify running backup and restore jobs using graphical user interface (GUI), parallel streaming, and advanced device management.

Among the options Arcserve Backup offers is the Arcserve Backup for UNIX and Linux Enterprise Option for SAP R/3 for Oracle. The option lets you back up SAP R/3 for Oracle data to data mover server storage devices and recover SAP R/3 for Oracle data from data mover server storage devices. Using Arcserve Backup UNIX and Linux Data Mover to back up your SAP data you can avoid transferring data via TCP communication. This approach helps improve backup and restore performance.

**Note:** For more information about backing up and restoring data to data mover servers, see the [UNIX and Linux Data Mover Guide](#).

## How the Option Protects SAP R/3 for Oracle Data

The Enterprise Option for SAP R/3 for Oracle (the option) lets you back up and restore online and offline SAP R/3 databases and the objects they contain. The option handles all communications between Arcserve Backup and the SAP R/3 database server while data is being backed up and restored. This communication includes preparing, retrieving, and processing the data sent back and forth across the network.

The option lets you process jobs efficiently, without interrupting operations, and assists in performing the following functions:

Action	Function
Backup	When a backup request is made, the option contacts the database, retrieves the necessary data, and sends it to Arcserve Backup, where the objects are backed up to storage devices.
Restore	Arcserve Backup retrieves the objects that you want to restore from the storage devices and passes them to the option. The option then writes this data to the database, completing the restore process.
Inquiry	Log information is collected, providing job analysis using an analysis tool.

The option helps you manage your SAP R/3 environment by enabling you to:

- Manage remote backups
- Back up complete databases or individual database objects, table spaces, or archive logs
- Restore a complete database or individual database objects, tablespaces, control files, or archive logs
- Perform inquiries about specific SAP R/3 objects
- Back up to a wide array of storage devices
- Perform host duplication

## Supported Functionality

The option provides the following functionality that enhances performance:

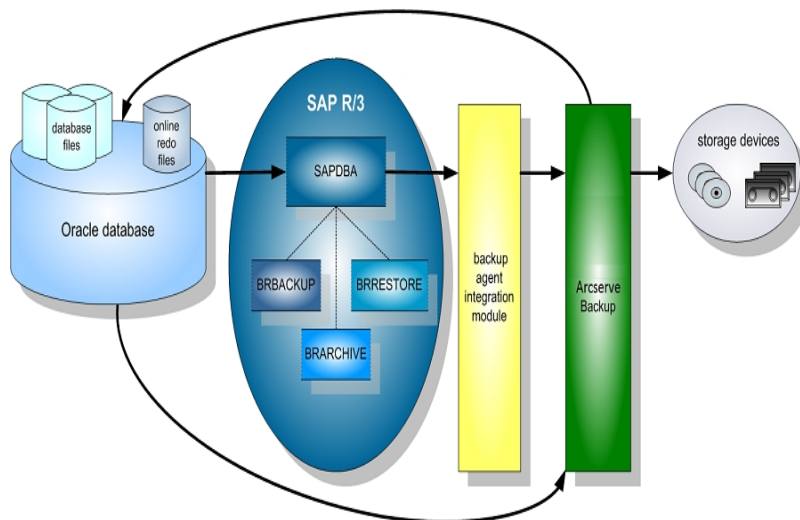
- **UNIX and Linux Data Mover support**--This functionality lets you back up and recover SAP R/3 for Oracle data from data mover server storage devices. In addition, the option lets back up and recover SAP R/3 for Oracle data from primary server and member server managed storage devices.
- **The backup option integration module**--Provides the infrastructure for the option. The backup option integration module serves as the interface that communicates information between Arcserve Backup and SAP R/3.
- **Multistreaming backups**--Lets you submit backups to multiple storage devices concurrently, which enhances backup performance and reduces the backup window. Multistreaming lets you subdivide jobs so that it uses multiple storage devices simultaneously. The backup option integration module provides the intelligence to stream jobs based on the number of file systems and the number of available storage devices.
- **Host duplication**--Lets you duplicate all the data from one SAP R/3 server to another. To use the host duplication feature, the configuration on each server must be the same.
- **Enhanced destination options**--Lets you specify different destination tapes for each day of the week in single stream mode or specify media pools in multistreaming mode. Using the enhanced destination options, you can better organize your backup tapes. For more information about enhanced destination options, see [Installing and Configuring the Option](#).

## How the Backup Option Integration Module Works

The Enterprise Option for SAP R/3 for Oracle application is used to store its data in Oracle databases. The backup option integration module is the option interface for Oracle databases. The backup option integration module links Arcserve Backup to SAPDBA or BR\* Tools. The SAPDBA and BR\* Tools modules handle the activity within your database, and the backup option integration module handles the mechanics of data transfer.

For the option to be able to use SAPDBA or BR\* Tools, the SAP R/3 application must be running. When SAPDBA or BR\* Tools start jobs, the backup option integration module is invoked automatically. When the backup option integration module is invoked, it handles the backup, restore, and inquiry requests.

The following diagram illustrates the sequence and process of these operations:



## How the Option Uses Multistreaming to Process Backups

The multistreaming capability increases the speed and efficiency of your backups by enabling you to back up a job to multiple tapes concurrently. Both online and off-line procedures can be performed using the multistreaming capability.

To use the multistreaming backup feature, you must set the following variables in the `util_par_file`:

**Note:** The file named `util_par_file` is a parameter file that the SAP agent backup utility requires.

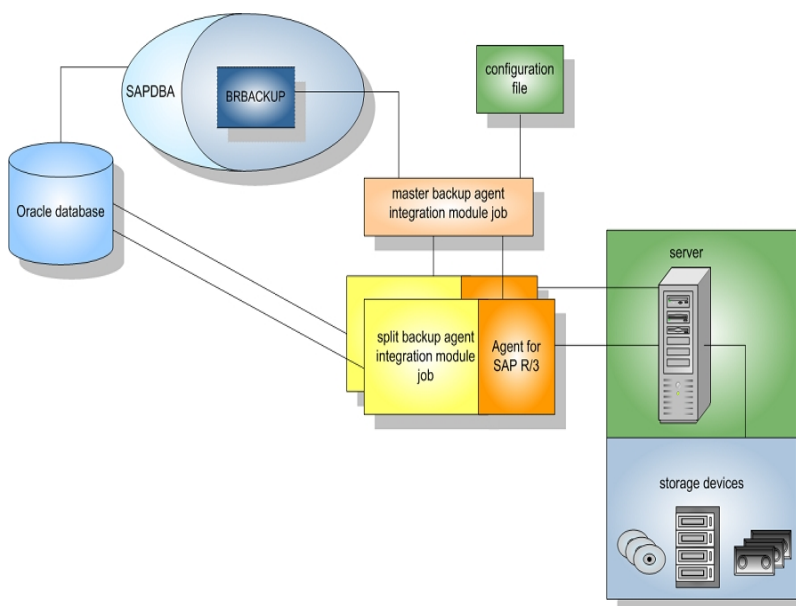
- **MULTISTREAM value**—Set this variable to true to enable the multistreaming feature.
- **MAXSTREAMS value**—Set this variable to the maximum number of storage devices that you want to run concurrently.

The default location of the `util_par_file` is as follows:

```
$CASAP_HOME(/opt/Arcserve/ABsapagt)
```

After you set these variables, multistreaming distribution is determined based on the number of file systems to back up, using the `MAXSTREAMS` value you set. For more information on configuring these variables, see the [Installing and Configuring the Option](#).

The following diagram illustrates how the option processes information by performing parallel jobs, without interrupting other SAP R/3 activities:



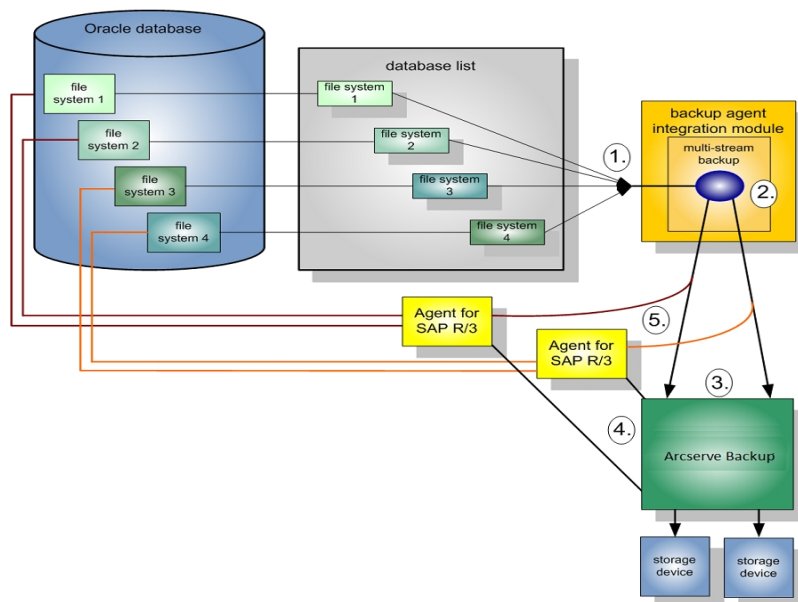
### Example: How Arcserve Backup Backs up Oracle Data Using Multistreaming

The following example illustrates data on four file systems being backed up to two storage devices. Because there are two storage devices, two jobs are created for the four file systems. Jobs are split according to the maximum number that you set in the MAXSTREAMS value (in this example, MAXSTREAMS is set to 2).

A backup request triggers the following process:

1. When the job request is made, SAP notifies the backup option integration module of the request.
2. The backup option integration module processes the job and regroups the four file systems in accordance with the MAXSTREAMS value you set.
3. The backup option integration module sends Arcserve Backup the information to process the jobs.
4. Arcserve Backup communicates with the option to start the job request.
5. When the option finishes processing the data, the backup option integration module is contacted. The backup option integration module aggregates the results of each job.

The following diagram illustrates data on four file systems being backed up to two storage devices:

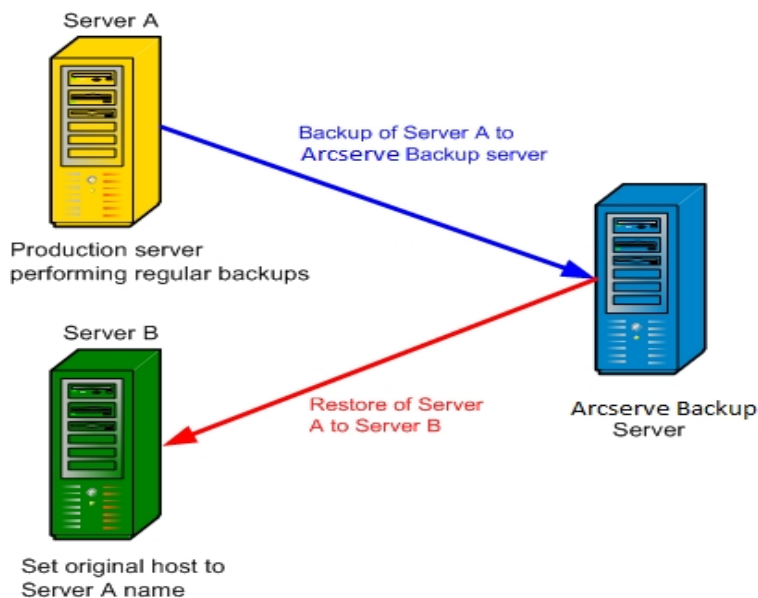


## How Host Duplication Works

The host duplication facility enables you to copy all the data on the host server and transfer it to another. This feature is useful when:

- You are upgrading your server and you want to move your data to a new system without shutting it down for hardware migration.
- You want to maintain a duplicate server as a backup in case your current system fails.

The following diagram illustrates the process of host duplication:



**Note:** As a best practice, you should reset the host duplication parameter after the job is complete.

To enable this feature, set the original host parameter in `util_par_file` to the name of the host from which the data being backed up originated.

**Note:** For more information about configuring these variables, see [Installing and Configuring the Option](#).



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## Chapter 2: Installing and Configuring the Option

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## How to Complete Prerequisite Tasks

Before installing the option, complete the following tasks:

- Verify that your system meets the minimum hardware and software requirements needed to the option. For a list of requirements, refer [Release Notes](#).
- Verify that the Arcserve Backup server component is installed in your system.
- Verify that you have super user privileges.
- Verify that the SAP R/3 server component is installed on the computer where you will install the option.
- (Optional) If you want to back up and restore to data mover servers, verify that Arcserve Backup UNIX and Linux Data Mover is installed on the node where you plan to install the option.

## Install the Option

You must install the Enterprise Option for SAP R/3 for Oracle on all database servers that you want Arcserve Backup to manage.

**Note:** For more information, see [Install the Option on Database Servers](#).

## Install the Option on Database Servers

After the installation of the option is complete, an express configuration script for the option starts automatically. The script lets you configure the Enterprise Option to back up SAP databases to data mover servers configured with locally attached devices, the primary server, or member servers. You must execute the script to complete the installation.

### To install the option on database servers

1. Specify the path to the Oracle home directory.

To specify the default Oracle home directory, press Enter. The default directory is as follows:

```
/opt/oracle
```

To specify a different directory, input the directory path and then press Enter.

2. Specify the Oracle SID.

To specify the default SID, press Enter. The default SID is as follows:

```
SAPID
```

To specify a different SID, input the SID and then press Enter.

3. Specify the path to the SAP home directory.

To specify the default SAP home directory, press Enter. The default directory is as follows:

```
/usr/sap
```

To specify a different directory, input the directory path and then press Enter.

4. Specify the complete directory path to the backup utility parameter file and then press Enter.

5. If the script detects that the UNIX and Linux Data Mover component is installed on the node, you must specify that you want to back up SAP data to the data mover server. Do one of the following:

- Enter "y" if you want to back up SAP data to the data mover server.
- Enter "n" if you do not want to back up SAP data to the data mover server.

**Note:** If you specified "n" or the UNIX and Linux Data Mover component is not installed on the node, the script prompts you to specify the host name of the Arcserve Backup server where you will back up

data. The Arcserve Backup server can be a primary server or a member server.

6. Specify the user name and password that you will use to log into the SAP tools (for example, SAPDBA) to submit backup jobs.

The configuration is complete.

## Configure the Option

After you install the ABsap and the ABbaim packages on your system, optionally, you can run the configuration script to reconfigure the option. However, before you configure the option, verify that the following information is available:

Verify the following items:

- The SAP Oracle SID
- The path to the Oracle home directory
- The path to the SAP home directory
- The path for the option home directory

You are now ready to begin configuring the option.

---

## Configure SAP Using the Configuration Script

The SAP configuration setup script lets you configure the option on SAP servers.

### To configure SAP using the configuration setup script

1. Enter the following command in the option home directory:

```
./sapsetup
```

2. To select the default home directory for the option, press Enter. The default directory is:

```
/opt/Arcserve/ABSapagt
```

To enter a directory other than the default, enter the directory path and press Enter.

3. Indicate whether Oracle and the option are installed on the same machine.

```
Is ORACLE installed on this machine? (y/n)
```

If Oracle and the option are installed on the same machine, enter y.

4. Enter the Oracle home directory path. Press Enter to use the default Oracle home directory. The default directory is:

```
/opt/oracle
```

To enter a directory other than the default, type the directory path and press Enter.

5. Enter the Oracle SID. To select the default, press Enter. The default ID is:

```
SAPID
```

To enter an SID other than the default, type the alternate SID and press Enter.

6. Enter the SAP home directory. To select the default directory press Enter. The default directory is:

```
/usr/sap
```

To enter a directory other than the default, type the directory path and press Enter.

7. The script asks you if you want to run the pfilesetup script now.

Do one of the following:

**Note:** You can run pfilesetup later if you want to create different utility parameter files. If you want to run the pfilesetup script later, type n.

- Type y

The configuration script (sapsetup) calls the utility parameter file setup script (pfilesetup). The pfilesetup script configures the utility parameter file needed by ABbaim.

The following is an example of the entries in pfilesetup:

HOST =<server where Arcserve Backup is installed>

USERNAME=<name of a user who has access to the SAP/Oracle files on the client node>

PASSWORD=<password of that user>

DESTGROUP=<Arcserve Backup device group>

DESTTAPE=<tape name>

MEDIAPOOL=<media pool name>

- Type n

The setup is complete.

**Note:** The next step is to edit the backup and restore configuration profiles.



## Configuration Files

To configure the option, you must edit the following configuration files:

- **util\_par\_file**--Lets you customize the backup option integration module parameter file, which controls the backup process. The default location of this configuration file is as follows:  
`$CASAP_HOME(/opt/Arcserve/ABsapagt)`  
**Note:** Optionally, you can rename `util_par_file` and save it in a specific location when you run `pfilesetup`.
- **init<SID>.sap**--Lets you define the SAPDBA or BR\*Tools configuration files. These files are part of the SAP environment.

## Edit util\_par\_file to Define Environment Variables

By editing util\_par\_file, you define the environment variables for the backup option integration module. To set the values for the parameters in this file, run sapsetup or pfilesetup.

When the option performs a SAP R/3 backup job, the backup option integration module creates a backup job and sends it to the Arcserve Backup server or the data mover server for execution. The job is submitted using the backup parameters that you set in util\_par\_file. In util\_par\_file you can:

- Designate tapes you want to use
- Define backup group properties
- Define media pool properties
- Define multistreaming properties

The complete path of the parameter file must be specified for the util\_par\_file entry in the init<SID>.sap configuration file. The util\_par\_file parameters are identical to the ca\_backup parameters.

For more information about parameters, see the [Command Line Reference Guide](#).

### Required Options

You must set the following parameters in util\_par\_file:

HOST= <CA\_host >

USERNAME= <name of a user who has access to the SAP/Oracle files on the client node>

PASSWORD= <password of that user>

### Additional Options

You can set the following optional parameters to customize options for tapes, group names, and media pools:

Options:

DATA\_MOVER\_HOST=< local data mover host name >.

ORIGINALHOST=< Original Hostname of the Backup when restoring one hosts data to another host >.

Log Options:

SNMP= < True/False >

TNG= < True/False >

EMAIL= < john.smith@ca.com >

---

PRINTER= < Ip >

Destination Options:

EJECT= < True/False >

DESTTAPE= < Tape Name >

DESTGROUP= < Device Group Name >

MEDIAPOOL= < Media Pool Name >

TAPEMETHOD= < Append / Owritesameblank / Owritesameblankany >

SPANTAPEMETHOD= < Owritesameblank / Owritesameblankany >

TAPETIMEOUT= < minutes >

SPANTAPETIMEOUT= < minutes >

#### Description of Additional Options:

- **SNMP**--Lets you send alert information via SNMP.
- **TNG**--Lets you send alert information via TNG.
- **EMAIL**--Lets you send alert information via EMAIL.
- **PRINTER**--Lets you send alert information to a printer.

**Note:** You should configure the SNMP, TNG, EMAIL, and PRINTER options using the Arcserve Backup Alert Manager before you configure the parameters in the util\_par\_file configuration file. For more information, see the [Administration Guide](#).

- **EJECT**--Lets you eject tapes after backups are complete.
- **DESTTAPE**--Lets you specify tape names to be used for backups.  
**Note:** Arcserve Backup ignores this option when the MEDIAPOOL option is specified.
- **DESTGROUP**--Lets you specify the tape group to be used for backups.  
**Note:** Arcserve Backup ignores this option when the MEDIAPOOL option is specified.
- **MEDIAPOOL**--Lets you specify the media pool to be used for the backup.
- **TAPEMETHOD**--Lets you specify the overwrite method to be used on the first tape during the backup. You can specify one of the following values:
  - Append
  - Owritesameblank
  - Owritesameblankany

- **SPANTAPEMETHOD**--Lets you specify the tape spanning method to be used on additional tapes during the backup. You can specify one of the following values:
  - Owritesameblank
  - Owritesameblankany
- **TAPETIMEOUT**--Lets you specify a timeout value for the first tape.
- **SPANTAPETIMEOUT**--Lets you specify a timeout value for additional tapes.

### Multistreaming Options

To use the multistreaming feature, set the following parameters:

MULTISTREAM= < True / False >

MAXSTREAMS= < Maximum number of streams to use >

### Schedule Options

You can set the following schedule options, which enable you to use a different tape, media pool, or both, following a seven-day cycle:

DAYOFWEEK = < True / False >

Without Multi-Streaming

DETTAPESUN= < Tape Name to use on Sunday >

DETTAPEMON= < Tape Name to use on Monday >

DETTAPETUE= < Tape Name to use on Tuesday >

DETTAPEWED= < Tape Name to use on Wednesday >

DETTAPETHU= < Tape Name to use on Thursday >

DETTAPEFRI= < Tape Name to use on Friday >

DETTAPESAT= < Tape Name to use on Saturday >

With Multi-Streaming

MEDIAPOOLSUN=< Media Pool Name to use on Sunday >

MEDIAPOOLMON=< Media Pool Name to use on Monday >

MEDIAPOOLTUE=< Media Pool Name to use on Tuesday >

MEDIAPOOLWED=< Media Pool Name to use on Wednesday >

MEDIAPOOLTHU=< Media Pool Name to use on Thursday >

MEDIAPOOLFRI=< Media Pool Name to use on Friday >

MEDIAPOOLSAT=< Media Pool Name to use on Saturday >

If you do not specify a tape for the current day when you set the schedule options, the tape specified in the DETTAPE is used as the default.

**Be aware of the following behaviors:**

- Tape names cannot exceed 24 characters.
- If you do not specify a media pool for the current day when using multistreaming, the media pool specified in MEDIAPOOL is used as the default.
- To comment out a line, enter # at the beginning of a line. This method applies to all options.
- If the UNIX and Linux Data Mover component is installed, the pfilessetup script asks you if you want to back up SAP data to data mover servers. If you specified y, the following item is saved in the utl\_par\_file:

```
DATA_MOVER_HOST=<local host>
```

This behavior lets you back up SAP data to devices that are attached locally to data mover servers.

## Edit init<SID>.sap to Define Backup and Archive Parameters

The SAPDBA or BR\*Tools configuration file, called init<SID>.sap, is part of the SAP environment and includes all of the backup and archive parameters. This configuration file provides the backup option integration module with critical parameters, including:

- backup\_dev\_type
- util\_par\_file

Use the following format when you specify these parameters:

- For an offline backup:  
    backup\_dev\_type = util\_file  
    util\_par\_file= <par\_file name>
- For an online backup:  
    backup\_dev\_type = util\_file\_online  
    util\_par\_file= <par\_file name>

When specifying the value for the util\_par\_file parameter, you must specify the full path. For example:

```
backup_dev_type = util_file  
util_par_file = /usr/sap/OR2/SYS/exe/run/initOR2.utl
```

**Note:** If you do not set the default for the backup\_dev\_type and util\_par\_file parameters in init<SID>.sap, you can change the default by using the BR\*Tools.

---

## Add User Equivalence to the SAPDBA User

Before you can use the option, you must add the SAPDBA user as an Arcserve Backup user. This provides necessary permission and enables the backup option integration module to send jobs to the Arcserve Backup server. The authentication equivalence settings must be established by a user with proper privileges.

**Note:** Within Arcserve Backup, the unique key is hostname.username. You cannot use the User Profile Manager.

### To add user equivalence for the SAPDBA user

1. Verify that the Arcserve Backup server is running.
2. Open the command line on the Arcserve Backup server and set the user equivalence using the following syntax:

```
ca_auth [-cahost <BackupServer hostname>] -equiv add <SAPDBAUser>  
<SAPAgent hostname> <ABBackupUser> [<ABUsername> <ABpassword>]
```

#### Example:

```
$>ca_auth -cahost oraserver -equiv add oracer ultra2 caroot caroot ""
```

This command authorizes SAPDBA user, oracer, on the ultra2 machine, to use the Arcserve Backup user name, caroot, on the oraserver host.

**Note:** In this example, caroot has no password, which is why "" is used.

For more information about setting user equivalence, see *the [Command Line Reference Guide](#)*.

## Set the Environment Variables on UNIX and Linux Systems

Before you can back up your database, you must set the following environment variables on UNIX and Linux systems:

- CASAP\_HOME (to the path of the option)
- ORACLE\_HOME

In addition, you must set the path to CASAP\_HOME when you upgrade from a previous release of the option.

The following table describes the library path required for each operating system:

System	Library Path
Linux	LD_LIBRARY_PATH=\$CASAP_HOME/lib:/opt/Arcserve/ABcmagt
Solaris	LD_LIBRARY_PATH=\$CASAP_HOME/lib:/opt/Arcserve/ABcmagt
AIX	LIBPATH=\$CASAP_HOME/lib:/opt/Arcserve/ABcmagt

You can now submit a backup through SAPDBA or BR\* Tools.



## How to Configure User Accounts to Access SAPDBA and BR\* Tools

SAPDBA and BR\* Tools let you log into SAP Oracle databases using any user account that is recognized by your computer's operating system. For example: oracle user, sap administrator, and so on.

To help ensure that the operating system account can perform SAP backup and restore operations using SAPDBA and BR\* Tools, verify the following configurations:

- **User Accounts**--The user account must have privileges that allow it to access SAP Oracle databases while logged into SAPDBA and BR\* Tools.

The following steps describe an example of how to configure this requirement on Oracle 10gr2 platforms:

1. Verify that the Oracle user account is a member of the SAP Oracle installation group. The following screen describes how to allow user accounts to join a group named oinstall.

```
[root@ ~ -rhel5-ia logs]# id sapadmin
uid=504(sapadmin) gid=2502(oinstall) groups=2502(oinstall),2503(dba),2505(casap)
[root@ ~ -rhel5-ia logs]#
```

2. Next, use the SQL\*Plus utility to configure the operating system to authenticate the user.

Obtain the value of the Oracle OS\_AUTHENT\_PREFIX initialization parameter as illustrated by the following screen:

```
SQL> show parameter OS_AUTHENT_PREFIX;

NAME                                TYPE        VALUE
-----                                -
os_authent_prefix                    string      ops$
SQL>
```

3. Create an Oracle user account using standard procedures. However, you must create the Oracle account by concatenating the value of OS\_AUTHENT\_PREFIX with the user.

**Example:** ops\$ + sapadmin = ops\$sapadmin

4. To verify that the user name does not exist, execute SQL\*Plus using the following commands:

```
SQL> select username from dba_users where username = 'OPSSAPADMIN';

USERNAME
-----
OPSSAPADMIN

SQL>
```

5. If the account does not exist, create the account using the following SQL\*Plus commands:

```
SQL> CREATE USER ops$apadmin IDENTIFIED EXTERNALLY;
```

6. After you create the account, verify that the account contains the DBA and CONNECT roles using the following SQL\*Plus commands:

```
SQL> select * from USER_ROLE_PRIVS where username = 'OPSSAPADMIN';

USERNAME          GRANTED_ROLE          ADM DEF OS_
-----
OPSSAPADMIN       CONNECT               NO YES NO
OPSSAPADMIN       DBA                   NO YES NO

SQL>
```

7. If the Oracle user account does not contain these roles, grant the roles DBA and CONNECT to the account using the following SQL\*Plus commands:

```
SQL> grant connect to ops$sapadmin;
Grant succeeded.
SQL> grant dba to ops$sapadmin;
Grant succeeded.
```

8. Verify that the newly created account can access SAP Oracle databases. To do this, log in with newly created account and execute the following command:

```
with the Partitioning, Data Mining and Real Application Testing options
[sapadmin@ -rhel5-ia ~]$ sqlplus /
SQL*Plus: Release 10.2.0.4.0 - Production on Sun Aug 8 17:59:35 2010
Copyright (c) 1982, 2007, Oracle. All Rights Reserved.
Error accessing PRODUCT_USER_PROFILE
Warning: Product user profile information not loaded!
You may need to run PUPBLD.SQL as SYSTEM
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.4.0 - 64bit Production
With the Partitioning, Data Mining and Real Application Testing options
SQL> select * from V$DATABASE;
```

- **SAP BR\* Tools**--The SAP BR\* Tools executables (for example, brbackup and brrestore) must have read and write privileges to the subfolder named sap-backup. sapbackup is located in the SAP Oracle data file folder when you log in using the operating system account.

## Uninstall the Option from UNIX and Linux Systems

Arcserve Backup contains an uninstallation script lets you uninstall the option from UNIX and Linux systems.

To uninstall the option from UNIX and Linux systems

1. Use the following steps to uninstall the option from your computer:
2. From the command prompt, access the Arcserve Backup Common Agent directory using the following command:

```
# cd $CAAGENT_HOME
```

3. Execute the following command:

```
# ./uninstall
```

4. Follow the on-screen instructions to complete the uninstallation process.

**Note:** Optionally, you can use the package management tool provided with your operating system to uninstall the option. The package management tools are as follows:

- **Linux platforms**--Use the rpm tool from command line prompt and execute the following command:  

```
rpm -e ABsap
```
- **Solaris platforms**--Execute the following command:  

```
pkgrm ABsap
```
- **AIX platforms**--Use the smit tool to uninstall the option.

---

## Chapter 3: Backing Up and Restoring SAP Data

You can perform operations such as backups, restores, or inquiries by using the SAPDBA menu or by entering SAPDBA commands at the command line. This chapter provides information about using the SAPDBA menu to back up and restore data. For information about using the command line, see the SAP R/3 documentation.

This section contains the following topics:

---

<a href="#">Overview of SAPDBA</a> .....	38
<a href="#">SAPDBA and BR* Tools You Can Use to Administer SAP Databases</a> .....	39
<a href="#">Database Backup Using SAPDBA and BR* Tools</a> .....	40
<a href="#">Requirements for Backing Up SAP Data to Data Mover Servers</a> .....	49
<a href="#">Data Restoration and Recovery Using SAPDBA</a> .....	50
<a href="#">Directory and File Locations</a> .....	51

## Overview of SAPDBA

SAPDBA is an Oracle database administration tool that lets you perform various database administration functions, including:

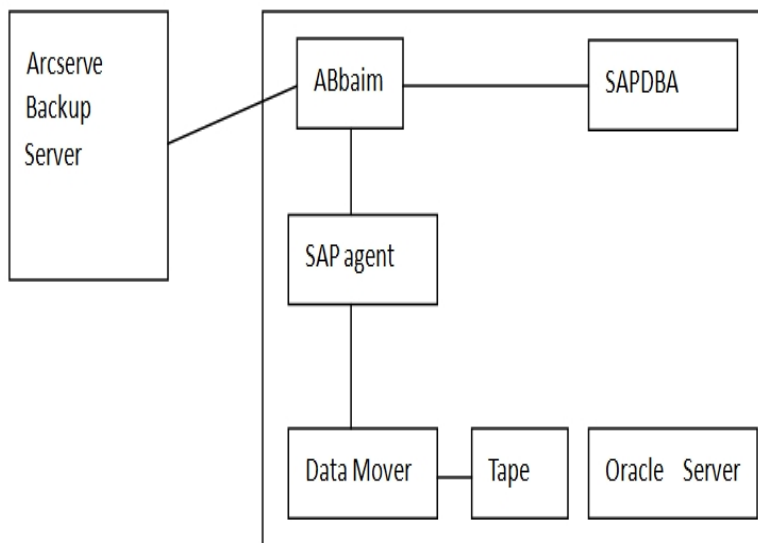
- Backing up, restoring, and recovering data
- Starting up and shutting down databases
- Extending tablespaces
- Monitoring and analyzing space on the database
- Reorganizing databases
- Recovering databases

SAPDBA uses BRBACKUP, BRARCHIVE, and BRRESTORE modules (which are embedded in the menu structure of SAPDBA) to integrate with the database backup, restore, and inquiry functions.

SAPDBA evaluates logs to decide if data can be recovered using the selected backups. SAPDBA evaluates the selected backup method and determines if it will prevent recovery between the time of the backup and the selected recovery end time (point in time). If SAPDBA cannot perform a recovery, it rejects the selected backup or recovery procedure.

In addition to the SAPDBA tool, BR\* Tools let you execute commands to perform backup, restore, and inquire operations.

The following diagram illustrates how SAP R/3 databases are backed to local data mover servers:



## SAPDBA and BR\* Tools You Can Use to Administer SAP Databases

Integrating SAPDBA and BR\* Tools with the option lets you back up and restore entire databases and reset database to a previous state. The SAPDBA and BR\* Tools functions are determined by the properties that are set in `util_par_file`.

For more information on setting `util_par_file` properties, see [Edit util\\_par\\_file to Define Environment Variables](#).

The following modules are available for Oracle database administration:

- **BRBACKUP**--Brings database servers online or offline, checks the file status, and places database tablespaces into backup mode to maintain consistency.
- **BRARCHIVE**--Provides online and offline backup of control files, data files, and offline redo log files as well as profiles and logs for backups.
- **BRRESTORE**--Recovers database data files, control files, and offline redo log files. Checks for available space prior to a restore while removing files that may be overwritten during the recovery.

When these modules are used, events are logged in the file system and corresponding database tables. When BRBACKUP or BRARCHIVE runs, backup logs and profiles are saved, enabling sophisticated volume management.

## Database Backup Using SAPDBA and BR\* Tools

SAPDBA and BR\* Tools let you back up complete databases or individual database objects such as tablespaces, control files, or archive logs. It works with Arcserve Backup to back up data while the database is online or offline. When performing an online backup, the database is running and still accessible to users; when performing an offline backup, the database shuts down and is inaccessible to users.



## Back Up Online Databases Using SAPDBA and BRBACKUP

When you back up an online database, BACKINT is called with a file list and the environment is defined in util\_par\_file. BACKINT initiates the backup with Arcserve Backup and synchronizes the process between BRBACKUP and Arcserve Backup.

An example of synchronization is when a tablespace is put into backup mode. If BRBACKUP successfully puts the tablespace into backup mode, BACKINT communicates the file name to the option. When the option has finished moving the data, BACKINT tells BRBACKUP to remove the backup mode on the tablespace. At the end of the backup, BACKINT exits with the appropriate exit code.

### To back up online databases using SAPDBA and BRBACKUP

1. Log on to SAPDBA.

The SAP Database Administration screen displays.

```

-----
SAPDBA V4.6D - SAP Database Administration
-----
ORACLE version : 8.1.7.0.0
ORACLE_SID     : CIS
ORACLE_HOME    : /dsk600/oracle/product/8.1.7P4S
DATABASE       : open
SAPR3          : not connected

a - Startup/Shutdown instance   h - Backup database
b - Instance information        i - Backup offline redo files
c - Tablespace administration  j - Restore/Recovery
d - Reorganization             k - DB check/verification
e - Export/import              l - Show/Cleanup
f - Archive mode               m - User and Security
g - Additional functions

q - Quit

Please select ==> _          "Copyright by SAP AG"

```

2. Select h - Backup database.

The Backup Database screen displays.

```

-----
Backup Database
-----
Current value
a - Backup Function      Normal backup
b - Parameter file      initPAS.sap
c - Backup Device type  external backup tool <backint>
d - Objects for backup  all
e - Backup type         force
g - Query only         no
h - Special Options ...

i - Standard backup     yes
j - Backup from disk backup
k - Restart backup
l - Make part. backup compl.

S - Start BRBACKUP <V4.6D>
q - Return
Please select ==> _
"Copyright by SAP AG"

```

3. Select c - Backup Device type.

The Select backup device type screen displays.

```

-----
Select backup device type <2003-04-16>
-----

Current Selection: external backup tool <backint> online

a - local tape
b - local tape auto changer
c - local tape juke box
d - remote tape
e - remote tape auto changer
f - remote tape juke box
g - external backup tool <backint>
h - external backup tool <backint> online
i - external backup tool <backint> with rman
k - local disk
l - local disk <create database copy>
m - local disk <create standby database>
n - remote disk
o - remote disk <create database copy>
p - remote disk <create standby database>

q - Return

Please select ==>
"Copyright by SAP AG"

```

4. Select h - external backup tool <backint> online.
5. Enter q to return to the Backup Database screen.
6. From the Backup Database screen, select e – Backup type.
7. From the Select backup type screen, select a – online.
8. Enter q to return to the Backup Database screen and select d - Objects for backup.

The Backup Mode/Backup Objects screen displays.

```

-----
Backup Mode/Backup Objects
-----
Current selections: "all"

a - "all" - whole database backup
b - "all_data" - whole database backup without index tablespaces
c - "full" - full backup <level 0>
d - "incr" - incremental backup <level 1>
e - "sap_dir" - SAP directories backup
f - "ora_dir" - ORACLE directories backup
g - "all" - a tablespace name
h - "all" - an ORACLE file id <number>
           or a range of file ids <number>-<number>
i - - an absolute file or directory name
j - - a combination: <item> or <item>,<item>,
q - Return

Please select ==>
"Copyright by SAP AG"

```

9. Specify the mode and objects to apply to this backup.
10. Enter q to return to the Backup Database screen.
11. Select s - Start BRBACKUP.

The back up starts.

**Note:** Optionally, you can call the brbackup command line utility to execute online database backup. The syntax for this command is as follows:

```
brbackup -d util_file -t online -m all
```

## Back Up Online Databases Using SAPDBA and BRBACKUP

When you back up an online database, BACKINT is called with a file list and the environment is defined in util\_par\_file. BACKINT initiates the backup with Arcserve Backup and synchronizes the process between BRBACKUP and Arcserve Backup.

An example of synchronization is when a tablespace is put into backup mode. If BRBACKUP successfully puts the tablespace into backup mode, BACKINT communicates the file name to the option. When the option has finished moving the data, BACKINT tells BRBACKUP to remove the backup mode on the tablespace. At the end of the backup, BACKINT exits with the appropriate exit code.

### To back up online databases using SAPDBA and BRBACKUP

1. Log on to SAPDBA.

The SAP Database Administration screen displays.

```

-----
SAPDBA V4.6D - SAP Database Administration
-----
ORACLE version : 8.1.7.0.0
ORACLE_SID     : CIS
ORACLE_HOME    : /dsk600/oracle/product/8.1.7P4S
DATABASE       : open
SAPR3          : not connected

a - Startup/Shutdown instance      h - Backup database
b - Instance information           i - Backup offline redo files
c - Tablespace administration     j - Restore/Recovery
d - Reorganization                k - DB check/verification
e - Export/import                  l - Show/Cleanup
f - Archive mode                   m - User and Security
g - Additional functions

q - Quit

Please select ==> _
                                     "Copyright by SAP AG"
    
```

2. Select h - Backup database.

The Backup Database screen displays.

```

-----
Backup Database
-----
Current value
a - Backup Function      Normal backup
b - Parameter file      initPAS.sap
c - Backup Device type  external backup tool <backint>
d - Objects for backup  all
e - Backup type         force
g - Query only         no
h - Special Options ...

i - Standard backup     yes
j - Backup from disk backup
k - Restart backup
l - Make part. backup compl.

S - Start BRBACKUP <V4.6D>
q - Return
Please select ==> _
"Copyright by SAP AG"

```

3. Select c - Backup Device type.

The Select backup device type screen displays.

```

-----
Select backup device type <2003-04-16>
-----

Current Selection: external backup tool <backint> online

a - local tape
b - local tape auto changer
c - local tape juke box
d - remote tape
e - remote tape auto changer
f - remote tape juke box
g - external backup tool <backint>
h - external backup tool <backint> online
i - external backup tool <backint> with rman
k - local disk
l - local disk <create database copy>
m - local disk <create standby database>
n - remote disk
o - remote disk <create database copy>
p - remote disk <create standby database>

q - Return

Please select ==>
"Copyright by SAP AG"

```

4. Select h - external backup tool <backint> online.
5. Enter q to return to the Backup Database screen.
6. From the Backup Database screen, select e – Backup type.
7. From the Select backup type screen, select a – online.
8. Enter q to return to the Backup Database screen and select d - Objects for backup.

The Backup Mode/Backup Objects screen displays.

```
-----
                          Backup Mode/Backup Objects
-----
Current selections: "all"

a - "all"      - whole database backup
b - "all data" - whole database backup without index tablespaces
c - "full"     - full      backup <level 0>
d - "incr"    - incremental backup <level 1>
e - "sap_dir" - SAP      directories backup
f - "ora_dir" - ORACLE  directories backup
g - "all"     - a tablespace name
h - "all"     - an ORACLE file id <number>
                  or a range of file ids <number>-<number>
i -          - an absolute file or directory name
j -          - a combination: <item> or <item>,<item>
q - Return

Please select ==>                                     "Copyright by SAP AG"
```

9. Specify the mode and objects to apply to this backup.
10. Enter q to return to the Backup Database screen.
11. Select s - Start BRBACKUP.

The back up starts.

**Note:** Optionally, you can call the brbackup command line utility to execute online database backup. The syntax for this command is as follows:

```
brbackup -d util_file -t online -m all
```

## Back Up Offline Redo Logs Using SAPDBA and BRARCHIVE

You can back up offline redo logs using SAPDBA and BRARCHIVE.

### To back up offline redo logs using SAPDBA and BRARCHIVE

1. Log on to SAPDBA.
2. The SAP Database Administration screen displays.

**Note:** Verify that you are in archive log mode and that automatic archiving is enabled. For more information, see the SAP R/3 documentation.

```

-----
SAPDBA V4.6D - SAP Database Administration
-----
ORACLE version : 8.1.7.0.0
ORACLE_SID    : CIS
ORACLE_HOME   : /dsk600/oracle/product/8.1.7PAS
DATABASE      : open
SAPR3         : not connected

a - Startup/Shutdown instance      h - Backup database
b - Instance information           i - Backup offline redo files
c - Tablespace administration     j - Restore/Recovery
d - Reorganization               k - DB check/verification
e - Export/import                 l - Show/Cleanup
f - Archive mode                  m - User and Security
g - Additional functions

q - Quit

Please select ==> _                                     "Copyright by SAP AG"

```

3. From the SAP Database Administration screen, select i – Backup offline redo files.

The Backup Offline Redo Logs screen displays.

```

-----
Backup Offline Redo Logs
-----
Current value
a - Archive function                Save offline redo logs
b - Parameter file                  initCER.sap
c - Archive device type             external backup tool <backint>
d - Number of redo logs             1000
f - Query only                      no
g - Fill tapes permanently          no
h - Special options...

i - Standard backup of offline redo files  yes
j - Backup from disk backup              no

q - Return

S - Start BRBACKUP <V4.6D>
Please select ==> _                                     "Copyright by SAP AG"

```

4. From the Backup Offline Redo Logs screen, select h – Special options.

The Backup Offline Redo Logs: Special Options screen displays.

```
-----  
-  
                          Backup Offline Redo Logs: Special Options  
-----  
Current value  
a - Confirm archive parameters      no  
b - Backup utility parameter file  /opt/CA/BABsapagt/initCER.utl  
c - Enter password interactively    no  
d - Apply logs into standby DB      don't apply  
j - Language                        English  
  
l - Show installed versions  
  
q - Return  
  
Please select ==> _ "Copyright by SAP AG"
```

5. Specify any additional options to apply to this backup. The Backup Offline Redo Logs screen displays.
6. Enter i to select - Standard backup of offline redo files.
7. Enter d - Number of redo logs. When prompted, enter the number of redo logs to be included in the backup.
8. Enter q to return to the Backup Archive Logs screen.
9. Enter s - Start BRARCHIVE.

The backup starts.

**Note:** Optionally, you can call the brbackup command line utility to execute the off-line redo logs backup. The syntax for this command is as follows:

brarchive -d util\_file -s



## Requirements for Backing Up SAP Data to Data Mover Servers

Arcserve Backup lets you back up SAP data to data mover servers. Data Mover servers are UNIX or Linux based computers that are configured with locally accessible disks or shared tape libraries. Using this approach to back up SAP data helps improve the overall performance of your backups.

To back up data to data mover servers, verify the following configurations are complete:

- Verify that the Enterprise Option for SAP R/3 for Oracle is installed on the node containing SAP data.
- Verify that the UNIX and Linux Data Mover component is installed on the node where you installed the Enterprise Option for SAP R/3 for Oracle.

**Note:** The first time you install the option on a data mover server, the installation script asks you if you want to back up SAP data to the data mover server. If you want to back up data to the data mover server, specify the y option.

- Verify that the data mover server is registered to an Arcserve Backup primary server.

**Note:** For information about how to register data mover servers with the primary server, see the [UNIX and Linux Data Mover Guide](#).

After all configurations are complete, Arcserve Backup will always perform your SAP data backup and restore operations via the data mover server.

**Note:** If the option is installed and configured to back up SAP data to data mover servers, however, the current configuration is not successfully backing up data to the data mover servers, you can reconfigure the option using a script file named `pfilesetup`. The `pfilesetup` script file is stored in the option's home directory.

## Data Restoration and Recovery Using SAPDBA

SAPDBA and BR\* Tools can be used to restore and recover data. To do this you must be in expert mode. For more information on enabling expert mode and using the SAPDBA menu to restore and recover data, see the SAP R/3 documentation.

## Directory and File Locations

The following sections provide a reference for the directories and files that are located in \$CASAP\_HOME:

- [SAP Directories](#)
- [SAP Files](#)

## SAP Directories

The following directories are located under `$CASAP_HOME`:

- **data**--internal data (release-specific information)
- **logs**--log files
- **nls**--messages files

## SAP Files

The following files are located in \$CASAP\_HOME:

- **backint**--The interface between SAP and the option that needs to be copied into the SAPEXE dir.
- **ca\_backup**--The program used to submit backup jobs.
- **cas\_encr**--The program used to encrypt passwords during setup.
- **ca\_restore**--The program used to submit restore jobs.
- **ckyorn**--The program used to read user information during setup.
- **InitCER.utl**--The .utl file created after setup.
- **pfilesetup**--The script used to create the .utl file.
- **sapagentd**--The daemon called by the common agent to perform a job.
- **sapsetup**--The script used to set up the option.

The following data file is located under \$CASAP\_HOME/data:

- **relversion**--Stores the Arcserve Backup build number that the option was built against.

The following log files are located under \$CASAP\_HOME/logs:

- **ca\_backup.log**--Logs the output of the latest ca\_backup command
- **ca\_restore.log**--Logs the output of the latest ca\_restore command
- **sapagentd.log**--Logs option activity



---

## Chapter 4: Best Practices

This chapter presents best practices for using the Enterprise Option for SAP R/3 for Oracle to backup and restore Oracle databases managed by SAP R/3 for Oracle.

This section contains the following topics:

---

<a href="#">Effective Backup and Recovery Strategies</a> .....	56
<a href="#">Test Environment</a> .....	57
<a href="#">Log File Protection</a> .....	58
<a href="#">Current Option Information</a> .....	59
<a href="#">Backups After Organizational Changes</a> .....	60
<a href="#">Job Status Information</a> .....	61
<a href="#">Tools You Can Use to Troubleshoot the Option</a> .....	62

## Effective Backup and Recovery Strategies

Plan your backup and recovery strategies for a database before you create the database, and maintain a regular backup schedule to ensure smooth recovery in case of database or media failure. If such planning is not considered before database creation, database recovery may not be possible in certain cases.

For more information about disaster recovery planning, see the "Disaster Recovery" appendix.

When you develop your backup and recovery strategy, consider the following:

- **Full backups**—Full database backups should be performed regularly; it is easier to recover a database from a full backup.
- **Tablespace-level backups**—Recoverable databases allow tablespace-level backups, which can be done online or offline. For an isolated application error, it is easier to restore from a tablespace-level backup image.
- **Online or offline backups**—Offline backups are usually faster, but require exclusive access to the database. Online backups reduce the database downtime; however, they allow other connections to the database while the backup is taking place.
- **Performance tuning**—You can improve performance of backup and restore operations by tuning your SAP R/3 parameters.

For more information about tuning SAP R/3 parameters for performance, see your SAP R/3 documentation.



## Test Environment

Test your backup and recovery strategy in a test environment before you move to a production system. By thoroughly testing your proposed backup and recovery strategy, you can identify and correct unexpected problems before they occur in a production situation.

## Log File Protection

Do not overwrite log files if you archive and retrieve files on the same directory. To protect your archived log files, restore them to a separate retrieval directory.

## Current Option Information

To ensure that you are current with the latest information about the option, visit Arcserve Technical Support.

## Backups After Organizational Changes

Initiate a backup each time you take the following actions:

- Rename a tablespace.
- Restore a tablespace that has been renamed, using the new tablespace name.
- Reorganize a table.
- Back up a corresponding tablespace after you reorganize a table.
- Change the tablespace or database configuration.
- Change anything in the configuration or organization of a database or tablespace.

## Job Status Information

When the option is used to back up or restore a database, you can view the status of the job. To monitor the job activity, click the Job Status Manager icon in the Arcserve Backup Quick Start window.

After a backup or restore job is submitted to Arcserve Backup by the option, you can monitor the status of the job using the Job Status Manager.

For more information about the Job Status Manager, see the [Administration Guide](#).

## Tools You Can Use to Troubleshoot the Option

You can use the following resources to troubleshoot backups and restores:

- Debugging
- Option Logs
- Restore Manager

## Debugging

You can use debug methods to help you troubleshoot problems. The following information will assist you in finding errors. When setting the debug level, set the number high to log more information or low to log less information. When you set the debug level, a value of 1 is the lowest and a value of 4 is the highest.

To set the debug mode of the option, add the environment statements shown in the following `/opt/Arcserve/ABcmagt/agent.cfg` file.

[20]

```
# SAP/Oracle Agent
```

```
NAME SAPAgent
```

```
VERSION 17.0
```

```
HOME /opt/Arcserve/ABcmagt
```

```
ENV CA_ENV_DEBUG_LEVEL=value
```

```
ENV ORACLE_HOME=/opt/oracle
```

```
ENV SAPSID=C11
```

```
ENV LD_LIBRARY_PATH=/opt/Arcserve/CAlib:/opt/Arcserve/ABcmagt:$LIBPATH
```

```
ENV SHLIB_PATH=/opt/Arcserve/CAlib:/opt/Arcserve/ABcmagt:$LIBPATH
```

```
ENV LIBPATH=/opt/Arcserve/CAlib:/opt/Arcserve/ABcmagt:$LIBPATH
```

```
#BROWSER
```

```
AGENT sapagentd
```

Use the Arcserve Backup Job Status Manager to view the activity log.

## Option Logs

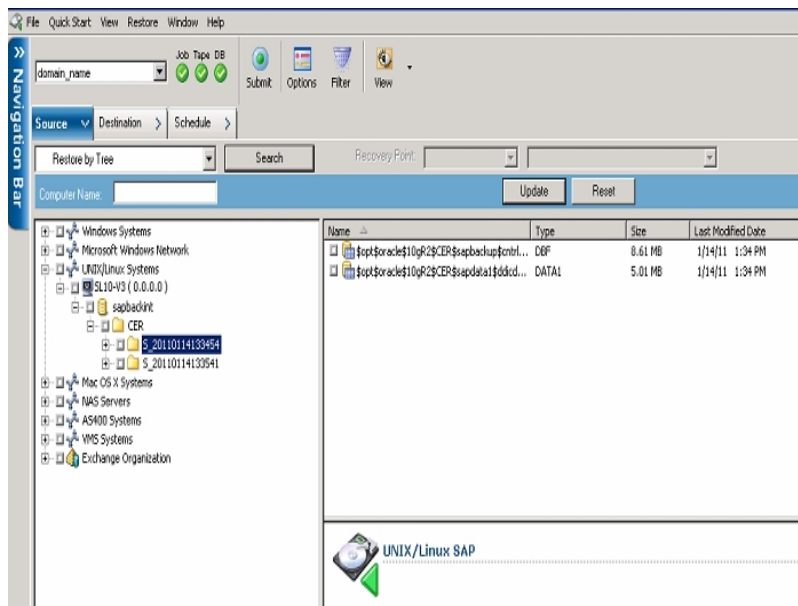
The option logs are found in `$CASAP_HOME/logs/sapagentd.log`. Option logs record information about jobs. This information can help solve problems you may encounter when performing an operation.



## Restore Manager

Use the Restore Manager to view detailed information about your backup job. You can view backed up file names and session information.

The following figure shows a view of the Restore Manager containing file names and session information:





---

## Chapter 5: Troubleshooting

This section contains the following topics:

---

<a href="#">Option Not Contacted</a> .....	68
<a href="#">Backup Jobs Fail</a> .....	69
<a href="#">Backup Jobs to Data Mover Servers Fail</a> .....	70
<a href="#">Second Backup Job Failed</a> .....	71
<a href="#">Data is Written to Only One Storage Device</a> .....	72

## Option Not Contacted

**Valid on Windows, UNIX, and Linux systems.**

### **Symptom**

The option not contacted when a backup job starts.

### **Solution**

If the option is not contacted, verify that you have user privileges. Check the backup log to see if you are an authorized user. You must have user privileges to perform backups.

## Backup Jobs Fail

**Valid on UNIX and Linux systems.**

### Symptom

After you submit a backup of SAP R/3 for Oracle data from the UNIX console or Linux terminal, the following error message appears in the console or terminal:

```
sh: /usr/sap/CER/SYS/exe/run/backint: Execute permission denied.
```

### Solution

This message appears when you submit a backup immediately after you installed the option. When you install the option, sapsetup assigns your Oracle account to the casap group. The error condition occurs only if you did not log off and log into Oracle to update the group assignment for your Oracle account.

To remedy this problem, log off and log into Oracle, and then resubmit the backup.

## Backup Jobs to Data Mover Servers Fail

**Valid on all UNIX and Linux operating systems supported by UNIX and Linux Data Mover.**

### **Symptom**

A backup job was submitted to a data mover server and the job failed.

### **Solution**

The `util_par_file` configuration file contains a parameter named `HOST` that defines the host name of the primary server to which the data mover server is registered. The values contained in the configuration file were populated when you ran the `sapsetup` script. If a data mover server is registered with a different primary server after you ran `sapsetup`, the `util_par_file` configuration file will contain a value of `HOST` that is not correct. This condition will cause backup jobs to data mover servers to fail.

To remedy this problem run the `sapsetup` script to reconfigure the `util_par_file` configuration file. This solution lets you update the value of `HOST` to the correct primary server.

## Second Backup Job Failed

**Valid in Windows, UNIX, and Linux systems.**

### **Symptom**

Initial backups are successful, but subsequent backups of the same job are not successful.

### **Solution**

Verify that the eject parameter is set to true. If the eject parameter is set to true, it will automatically eject the tape after the first backup, causing the next backup job to fail because there is no available tape to write to.

## Data is Written to Only One Storage Device

**Valid on Windows, UNIX, and Linux systems.**

### **Symptom**

The multistreaming parameter set to true, the MAXSTREAMS value set to 2, and there are two available storage devices. However, Arcserve Backup writes backup data to only one storage device.

### **Solution**

Multistreaming backups are based on the parameter values that you specify. If the MAXSTREAMS value specified is 2, and the second storage device is in use during the backup, or there is only one file system on the operating system, Arcserve Backup writes the backup data to to only one storage device.



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